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FLOOD INSURANCE STUDY

ORIGINAL

CITY OF HANFORD, CALIFORNIA

KINGS COUNTY

VOLUME 1 OF 1

Federal Emergency Management Agency

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NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

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FLOOD INSURANCE STUDY
CITY OF HANFORD, KINGS COUNTY, CALIFORNIA

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the City of Hanford, Kings County, California and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were performed by Gill and Pulver Engineers, Inc., for the Federal Emergency Management Agency (FEMA), under Contract No. EMW-84-C-1637. This study was completed in June 1985.

1.3 Coordination

Areas requiring detailed study were identified at an initial Consultation and Coordination Officer (CCO) meeting attended by representatives of the City of Hanford, FEMA, and the study contractor in April 1984.

On July 16, 1984 and April 8, 1985, meetings were held with representatives of the city and the city's consultant to obtain data for the study.

On November 22, 1985, the results of the study were reviewed at an intermediate/final CCO meeting attended by representatives of the community, FEMA, and the study contractor. The study was acceptable to the community.

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2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated areas of the City of Hanford, Kings County, California. The area of study is shown on the Vicinity Map (Figure 1).

The areas studied by detailed methods include two areas along the East Branch of Peoples Ditch in the northeastern section of Hanford. These areas, which were studied by shallow flooding methods, are located south of Clover Lane and west of Neill Court. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development or proposed construction through 1990.

Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The areas studied by approximate analyses include: an area located north of and adjacent to Lincoln School between South Douty Street and Harris Street; Brown Street Basin located south of Brown Street and First Street; State Highway 198 between Brown Street and White Street; an area adjacent to Lee Richmond School west of Lassen Drive; Beacon Basin at Third Street and Eleventh Avenue; and Mussel Slough originating northeast of the Atchison, Topeka and Sante Fe Railroad and running north towards Aspen Street. The scope and methods of study were proposed to, and agreed upon by, FEMA and the City of Hanford.

2.2 Community Description

Hanford is the county seat of Kings County and is situated approximately 225 miles from both San Francisco to the north and Los Angeles to the south.

The population of the Hanford urban area has increased from 14,528 in 1950 to 24,350 as of January 1, 1985. This represents an increase of 68 percent in the 35-year period (Reference 1).

Hanford was originally established in 1877 in conjunction with the extension of the Southern Pacific Railroad spur west from Goshen. The settlement was named for James Hanford, a railroad paymaster. Two years after being incorporated in 1981, Kings County broke off from the western portion of Tulare County, at which time Hanford was designated as the county seat (Reference 2).

Hanford is located in a region of semiarid climate that receives an average rainfall of 8.1 inches. The humidity ranges from 20 to 30 percent in the summer and 50 to 70 percent in the winter. Temperatures range from an average high of 97.3 degrees Fahrenheit in July to an average low of 32.6 degrees Fahrenheit in January, with a mean temperature of 80.5 degrees Fahrenheit (Reference 3).

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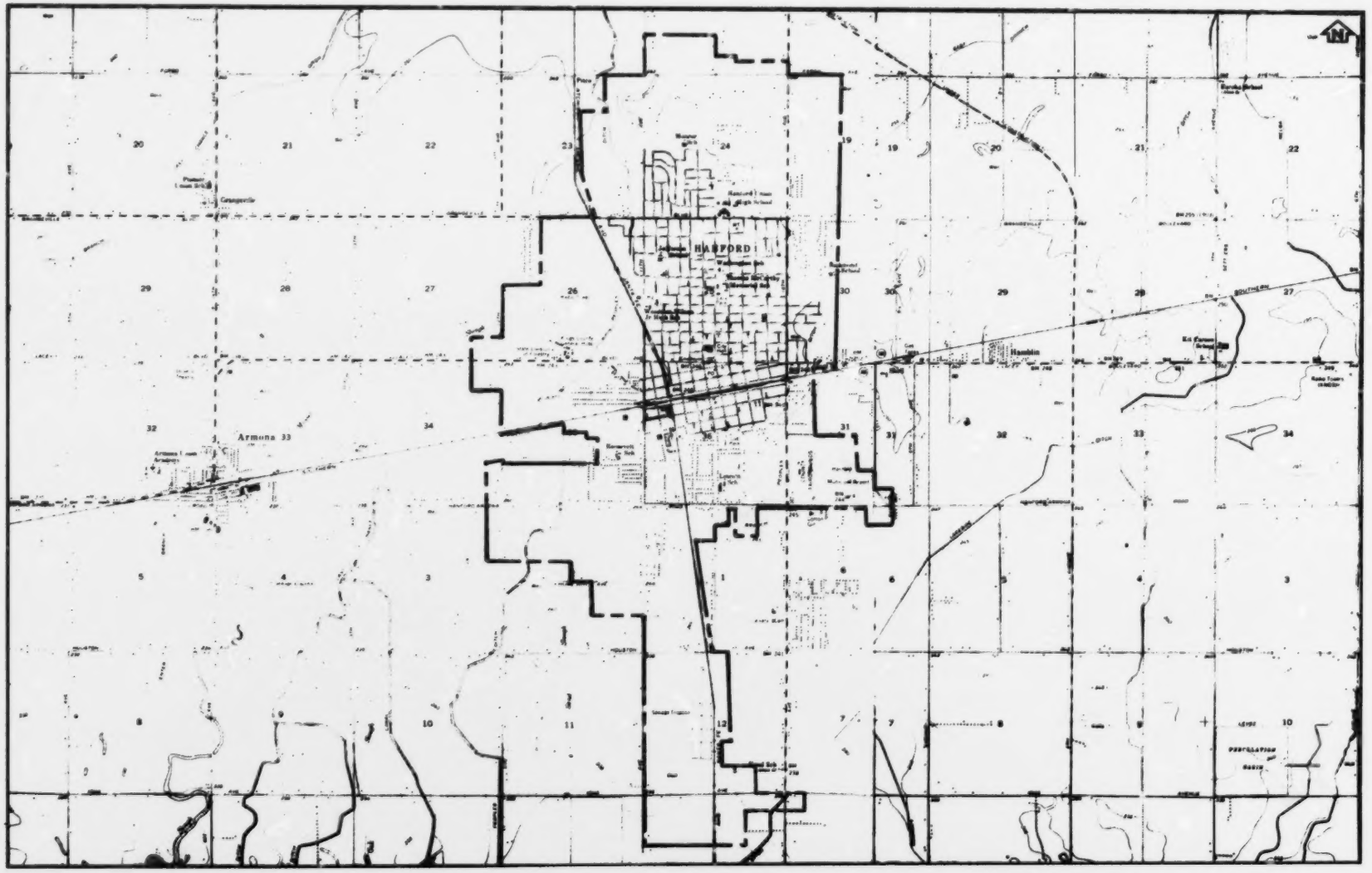

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF HANFORD, CA.

(KINGS COUNTY)

APPROXIMATE SCALE

1 0 1 2 3 MILES

VICINITY MAP

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The terrain is relatively flat with good drainage due to the sandy loam subsoil underlying the area.

2.3 Principal Flood Problems

Street flooding is the principal flood problem in Hanford.

2.4 Flood Protection Measures

There are no proposed or completed flood protection measures in the City of Hanford.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak 100-year flood volumes for each flooding source studied in detail affecting the community. The 100-year rainfall was developed from precipitation frequency data published by the California Department of Water Resources (Reference 4).

The East Branch of Peoples Ditch is a man-made facility designed as part of a water delivery system which diverts water from the Kings River and distributes it to the agricultural areas south of the Kings River. All water that enters the Peoples Ditch is controlled by the operation of the water conveyance facility.

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The Kings County, City of Hanford area has a semiarid climate and is extremely dependent on a scarce source of water; therefore, regulation and distribution of water through the area is strictly controlled. In the investigation of the flooding area in northeast Hanford, it was found that the source of flooding was not from the Peoples Ditch but was due to inadequate internal drainage within the city. The Peoples Ditch is a water supply facility and not a drainage facility. The usual hydrologic analysis performed for a Flood Insurance Study was not appropriate to analyze flows in the Peoples Ditch. Therefore, hydrologic and hydraulic analyses were not done.

It is the intention of the City of Hanford to pump water from areas currently subject to flooding from internal drainage within the city into Peoples Ditch. Water will then be conveyed by the Peoples Ditch to sites where the drainage water will be used for groundwater recharge.

3.2 Hydraulic Analyses

Analyses of the peak runoff volumes of flooding from the sources studied were carried out to provide estimates of the elevations of the 100-year floods. Peak runoff volume was developed from calculations of several storm durations from the time of concentration to the 72-hour storm. Time of concentration was calculated from estimates of initial storage and overland flow time and travel time in channels or storm drains. Loss rates were established using the Soil Conservation Service Urban Hydrology Methods.

Potential flooding along Peoples Ditch resulting from pumping of drainage water into the ditch will not cause a flooding problem because in the event of potential overtopping of the canal, the pumps would be shut down. It was concluded that flooding from the Peoples Ditch is not a flood hazard within the City of Hanford.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the maps; the description of the marks are presented in Elevation Reference Marks (Exhibit 1).

4.0 FLOODPLAIN MANAGEMENT APPLICATION

The NFIP encourages state and local governments to adopt sound floodplain management programs. Therefore, each Flood Insurance Study provides 100-year flood elevations and delineations of the 100- and 500-year floodplain boundaries and 100-year floodway to assist communities in developing floodplain management measures.

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4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2 percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the 100-year floodplain boundaries for shallow flooding have been delineated using the flood elevations from the peak volume determinations. Flood boundaries were delineated using photogrammetric mapping at a scale of 1:1200, dated May 28, 1982 (Reference 5).

The 100-year floodplain boundaries are shown on the Flood Insurance Rate Map (Exhibit 2). On this map, the 100-year floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AH). Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, the 100-year floodplain boundary is shown on the Flood Insurance Rate Map (Exhibit 2).

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 100-year floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced.

For this study, floodways have not been determined because areas studied within the community exhibit shallow flooding and ponding only.

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5.0 INSURANCE APPLICATION

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AH

Zone AH is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 500-year floodplain, areas within the 500-year floodplain, areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

The Flood Insurance Rate Map is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 100-year floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols the 100-year floodplains.

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7.0 OTHER STUDIES

The Flood Insurance Study for Kings County, California (unincorporated areas) is currently being prepared (Reference 6). The results of that study will be in exact agreement with this study.

This study supersedes all previous studies for the City of Hanford, California (Reference 7).

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, FEMA, Presidio of San Francisco, Building 105, San Francisco, California 94129.

9.0 BIBLIOGRAPHY AND REFERENCES

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3. Kings County Economic Development Commission, Kings County, California Handy Facts, 1984.

4. California Department of Water Resources, Hydrologic Data Computation No. 17, Atlas of Rainfall Frequency in California, J.D. Goodridge, Sacramento, California, 1974.

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EXHIBIT 1 - ELEVATION REFERENCE MARKS
CITY OF HANFORD, KINGS COUNTY, CALIFORNIA

Reference Marks	Elevation (feet NGVD)	Description of Location
RM 1	245.16	USGS Number 250 - Brass cap in granite railing at east side of courthouse steps (south entrance).
RM 2	240.99	USGS RM 2 - Brass cap in top of curb at north curb return in northwest corner of intersection of Irwin Street and Lacey Boulevard.
RM 3	247.85	City of Hanford bench mark number 27 - 1½ inch brass cap in top of curb at the north end of the curb return in the northeast corner of the intersection of Grangeville Boulevard and 10th Avenue.

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